

1582, 1752

The calendar introduced by Julius Caesar in 45 BC was based on a TROPICAL YEAR of 365.25 days. It was known already during the Middle Ages that the length of the year was less than this, and that the calendar was getting more and more out of step with the seasons. The Church had at various times considered plans of reform such as those proposed in the 15th cent. by Peter of Arilly and Nicholas of Cusa. Sixtus IV

sought the advice of Ptolemy the leading astronomer of the day, but the latter died soon after. Finally Gregory XIII appointed a commission to study the question and founded the Vatican Observatory to provide the necessary astronomical data. It was decided to drop 10 days from the calendar to bring the vernal equinox back to the date it had been at the time of Caesar. The leap year was omitted in century years, except when the year is divisible by 400, so that the average length of the year

(2)

became 365.2425 days which is very close to the length of the tropical year. In fact the difference will not amount to a day until about 4500. The Gregorian calendar was promulgated in 1582 when the day after Oct. 4 became Oct. 15. In Protestant countries there was strong opposition to the reform. England (and the American colonies) did not adopt the new calendar until 1752. It was

introduced in Russia in 1918 (by Lenin);  
in Rumania and Greece 1924; and in  
Turkey in 1927.

Proposals have been made to alter  
the leap year rules to adjust the calendar  
year even more closely to the tropical yr;  
but alteration of the present rules seems  
unnecessary. In one respect the Gregorian  
Calendar is even more accurate than its  
designers knew. Not until 8000 will the vernal  
equinox begin to deviate systematically by as much as  
half a day from its present date.

Oct 15, 1582

Beginning of Mexican Cal.

there was no Oct 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 = 10 days

$$\therefore JD = JD \text{ of } 2299160 + 1 = 2299161 \quad \text{K}$$

$$\div 7 \quad \text{rem } 4/7 = \text{FRI}$$

Oct 4, 1582

End of Julian Cal.

Procedure

$$(4712 + 1580^4)(365.25) = 2298153$$

Jan 1, 1580

A. (1580) is the closest leap yr.

2298153 is correct by Smithsonian Table

For Jan 0, 1580 subtract 1 to get 2298152

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$$\text{To Jan 1, 1581} + 366^B = 2298519 \text{ (Correct)}$$

B. Gross part 2/29/1580

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$$\text{to Jan 1, 1582} + 365 = 2298884 \text{ (Correct)}$$

To Oct 4, 1582, add days from Jan 1 to Oct 4

Left for Jan = 30 (not 30, not 31) because started with Jan 1.  
 Feb = 28 (not a leap yr)  
 Mar 31  
 Apr 30  
 May 31  
 June 30  
 July 31  
 Aug 31  
 Sep 30  
 Oct 4

276 d

Then 
$$\begin{array}{r} 2,298,519 \\ + 276 \\ \hline 2,299,160 \end{array}$$

check Smith Table

$$\div 7 = \text{Rem} = \frac{3}{7}$$

$$\frac{0}{7} = \text{Mon}$$

$$\frac{1}{7} = \text{Tue}$$

$$\frac{2}{7} = \text{Wed}$$

$$\frac{3}{7} = \text{Thur.}$$

It was a  
 Thur so  
 this is  
 correct

Oct 4, 1582  
 Julian

1582

OLD FARMER'S  
ALMANAC FOR 1992  
PG 274

Earth's voyage around

Sun takes 365 d 5h 48  $\frac{3}{4}$  min.

Julius Caesar added an extra day  
every 4th year. This is equivalent to  
adding 6 hours per year. or .1875 day per  
year too much. or .0078125 day per yr.  
 $\frac{1}{.0078125} = 128$  yrs. really. 007518797

In 1582 Gregory XIII said century yrs  
divisible by 400 were leap yrs. Others not.

about yr 5388 we're going to have  
to add another extra day not currently  
in the formula.

$$365 \text{ d } 5 \text{ h } 48 \frac{3}{4} \text{ min} \equiv 0.2421875$$

$$\text{many calculators use } 365.2422$$

365 days is 0.2422 days short of true orbit

366 days is 0.7578 days over true orbit

$$(4 \times 0.2422) = 0.9688$$

Every 4 yrs there is an over correction of 0.0312 days  
In 400 yrs this is  $(400)(0.0312) = 12.48 \text{ days} = 3.12 \text{ days}$   
but leap removes 3 so it is overcorrected 0.12 days

	(-) <u>Cal Days</u>	(+) <u>Earth around Sun</u>	<u>Acc day</u>
1582	Correct	Correct (Assume)	0.000
1583	365	365.2422	+ .2422
1584	365 <sup>L</sup>	365.2422	- .5156
1585	365	365.2422	- .2734
1586	365	365.2422	- .0312
1587	365	365.2422	+ .211
1588	366 <sup>L</sup>	365.2422	- .5468
1589	365	365.2422	- .3046
1590	365	365.2422	- .0624
1591	365	365.2422	+ .1798

1592	366	365.2422	-0.578
1593	365	365.2422	-0.3358
1594	365	365.2422	-0.0936
1595	365	365.2422	+0.1486
1596	366	365.2422	-0.6092
1597	365	365.2422	-0.367
1598	365	365.2422	-0.1248
1599	365	365.2422	+0.1174
1600	366 <sup>1</sup>	365.2422	-0.6404
1601	365	365.2422	-0.3982
1602	365	365.2422	-0.156
1603	365	365.2422	-0.0862

The Christian religion, in supplanting the Roman Pantheon, took over the civil task of calendar-making. The ecclesiastical calendar adopted in all Catholic and most Protestant countries of Europe, is luni-solar, regulated partly by the sun, partly by the moon; hence the complication of movable and immovable feasts. The chief movable feast is Easter, and it governs all the others. Arguments about the proper date for celebrating it had begun by the Second

century. The Jews celebrated their corresponding  
feast of Passover on the 14th day (the full moon)  
of their first month, at the spring equinox.  
most Christian sects felt that Easter should be  
on a Sunday, but some heretics followed  
the Jewish plan

1582

The Gregorian Cal. is not absolutely correct, the Cal. yr being 20 sec. longer than the tropical year. This difference will not amount to 1 day until 3,323 yrs have elapsed.

WEDNESDAY OCT. 4, 1582

Last day of Julian Cal. (old style)  
next day was  
Thurs. Oct 15, 1582 - Begins  
Gregorian Cal.

Oct 4, 1582

Duncan: Cal

When Bells chimed across Europe in the waning moments of Oct. 4, 1582, the Calendar jumped 10 days.

Oct 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 8 2  
did (does) not exist

Oct 15, 1582

Duncan: Cal

The Gregorian Cal. started Oct 15, 1582, one day after Oct 4, 1582 (by the Julian Cal.)

The loss of 10 days genuinely upset many people who felt that something had been stolen from them.

Kings and others worried about taxes not collected, wages not earned and deadlines 10 days sooner.

Oct 1582 had only 21 days.